

ature pertaining to American fungi is small and easily collected, and will also tend to set on their guard those who, with imperfect knowledge, rush into print with descriptions of supposed new species.

Over half the entries are the writings of fifteen authors, each of whom has contributed ten or more entries each. Two-fifths of these are foreigners, viz.: Fries 11 entries, Von Thümen 11, Winter 12, Saccardo 13, Berkeley 30 and Cooke 71, total 148 entries; while three-fifths are Americans, viz.: Arthur 10 entries, Bessey 11, Leidy 11 (all pertaining to fungi parasitic on animals), Gerard and Trelease 12 each, Burrill 17, Farlow 31, Peck 40 and Ellis 50, total 194 entries.

The slight biographical item of dates of birth, and in some cases of death appended to each author's name (with 43 exceptions) has its value. It brings out the interesting fact that over one-fourth of the American writers enumerated (excluding the twenty-four names without data) were born either during or since 1850, and constitute 35 per cent. of those living at the beginning of the present year. They are also represented in the list of chief writers mentioned above. The large percentage of young investigators obviously promises an accelerated development of this field of science. Only four foreign writers occur whose births do not antedate 1850, of whom Bagnis, now dead, Pirotta and Voglino are Italians, and Rostafinski a Pole.

Other interesting statistics might be gleaned from this list, but space forbids. A supplement gives an account of ten exsiccata, three American and the others containing American specimens.

Every student of fungi will feel that he is indebted to the compilers for a valuable service, and one no other botanists were in position to perform so acceptably.

NOTES AND NEWS.

PROF. G. C. WITTSTEIN died at Munich on June 1, in his seventy-eighth year.

A CORRESPONDENT of the *Revue Horticole* reports the growth of mistletoe on an old peach tree.

IN THE *Journal of Botany*, for September, R. Miller Christy has a paper entitled "Notes on the botany of Manitoba."

DR. H. MAYR, of the Forestry Institute of the University of Munich, has accepted a professorship in the University of Tokio.

DR. H. VÖCHTING, author of numerous important botanical works, has been made professor of botany at the University of Tübingen.

MR. TOKATURO ITO gives an interesting account, in *Journal of Botany*, of the history of botany in Japan. It is accompanied by a portrait of Ito Keisuke.

M. PIERRE VIALA, of Montpellier, France, an investigator of eminence, is visiting this country to study the diseases of the grape and of other cultivated plants.

COPIES of the desiderata (Ranunculaceæ to Rosaceæ incl.) of the herbarium of the Department of Agriculture, can be had on application to the Commissioner of Agriculture.

DR. V. F. KOSTELETZKY, professor of botany at Prague, died August 18, aged 87. It will be remembered that our malvaceous genus *Kosteletzkya* was named in his honor by Presl.

AT THE RECENT meeting of the British Association Count Solms-Laubach described a genus of fossil plants (Bennettites), the type of a new group between Angiosperms and Gymnosperms.

THE FINDING of *Grindelia squarrosa* at Evanston, Ill., is recorded by L. N. Johnson in *Science* for September 23. It is a common plant in western Iowa and Minnesota, and especially on the plains of Dakota.

MR. JAMES E. HUMPHREY, Dr. Goodale's assistant in the summer school of botany at Cambridge last summer, has been appointed instructor in botany at the State University, Bloomington, Ind., and has entered upon his duties there.

AT THE recent Manchester meeting of the British Association the following grants were made for botanical work: Botany (and zoology) of the West Indies, £100; flora of China, £75; flora of Bahamas, £100; Peradenyia botanical station, £50.

THE LECTURE of Miss Helen C. De S. Abbott, on "Plant chemistry as illustrated in the production of sugar from sorghum," has been distributed as a reprint from the proceedings of the alumni association of the Philadelphia College of Pharmacy.

THE FIRST NUMBER of the *Annals of Botany* contains papers by Prof. Marshall Ward, Mr. Walter Gardiner and Mr. Tokaturo Ito, Miss Calvert and Mr. L. A. Boodle, Messrs. Gregg, F. W. Oliver, Reynolds, Blake and Prof. Bayley Balfour. Prof. Ward's paper is on the histology and fruits of *Rhamnus*.

MILLSPAUGH'S *American Medicinal Plants* is completed with the appearance of the sixth fascicle. The work is a valuable one, has been well done, and should be a great help to homœopathic physicians. It contains 188 colored illustrations, and complete text, of all the plants indigenous and naturalized in the United States, which have been proven and incorporated in the Homœopathic *Materia Medica*.

A NEW PERIODICAL devoted to botany has just been issued at St. Petersburg. It is published in connection with the botanical garden of St. Petersburg University, the editors being Profs. Beketoff and Gobi. The title is *Scripta Botanica Horti Universitatis Petropolitanae*, which in reference will be abbreviated to *Scripta Botanica*. A welcome feature is that papers in Russian are followed by abstracts in French or German.

THE SOURCE of nitrogen in Leguminosæ has long been an interesting question. M. Hellriegel has attributed it to bacteria found abundantly in the well-known tubercles on the roots of this family. His experiments showed that plants deprived of bacteria were starved, while those which

had the benefit of them flourished, and the tubercles were highly developed. It will be remembered that Prof. H. Marshall Ward (BOT. GAZ. xii. 235) refers these so-called bacteria to the germs of a fungus related to *Ustilago*. In either case the tubercles seem to have to do with the nitrogen supply.

DR. GEORGE VOLKENS has published a series of observations on the plants of the Egyptian and Arabian desert. According to *Gardener's Chronicle* the physiological history of the plants is given in relation to the absorption and transpiration of water, the assimilation or digestion of food, the mechanical frame-work, etc. All these phenomena are more or less modified to suit the remarkable climatal conditions that prevail.

IN HIS synopsis of Tillandsiæ, in the *Journal of Botany*, Mr. J. G. Baker has completed eighty-eight species of *Tillandsia*, of which twenty-four are new. Of these new species six come from Mexico, one of which bears the familiar name *T. Parryi*, having been discovered in Central Mexico by Parry and Palmer. The *T. juncea* Le Conte, and *T. Bartramii* Ell., of Chapman's Flora, become *T. setacea* Sw., while *T. bracteata* Chapm. is *T. fasciculata* Sw.

THE RED PATCHES on the leaves of *Chenopodium album*, the common pig weed, is found by Prof. H. Osborn, of the Iowa Agricultural College (*Science* for September 30), to be associated with larvæ of the same color, belonging to the leaf-hopper, *Thamnotettix seminudus* Say. Although the insect is quite common, it seems to have heretofore escaped observation in its larval form. The conjecture is hazarded that it is the cause of the change of color in the leaves.

THE ASTONISHING ACTIVITY of our friends of the Pacific coast does not abate, and parts of *Pittonia* and *Bulletins* of the California Academy of Science appear with unexpected frequency. The sixth contribution of Prof. E. L. Greene, entitled "Studies in the botany of California and parts adjacent," has now come to hand, containing (1) notes on the botany of Santa Cruz Island, (2) a catalogue of the flowering plants and ferns of the Island of Santa Cruz, (3) three new species.

THE *Bulletin of Miscellaneous Information*, begun to be issued in monthly parts from Kew Gardens, has now reached its ninth, or September number. The object is to give notes on economic products and plants to which attention has been drawn in the correspondence or work at Kew. The last number contains two parts, xvii—Annotto (*Bixa Orellana* L.), and xviii—Notes on articles contributed to the museum of the Royal Gardens, Kew, from the Colonial and Indian Exhibition, 1886. Only cranberries and buffalo berries were received from Canada.

DR. C. C. PARRY has just distributed a partial revision of the *Uva-ursi* section of *Arctostaphylos*, as represented on the Pacific coast. In it *A. pungens* of various authors (not HBK.) becomes *A. Manzanita* Parry; *A. glauca*, in part, of various authors (not Lindl.) becomes *A. viscida* Parry; *A. Standfordiana* Parry is a new species heretofore confounded with *A. glauca*; *A. insularis* Greene, in herb., is a new species from the island of Santa Cruz; and *A. Pringlei* Parry is from Lower California. *A. pungens* HBK. is Mexican.

SOME RECENT researches of Molisch on the fall of leaves, as summarized in the *Bot. Zeitung* for July 29, are of interest. Molisch finds the formation of the separating layer to be chiefly dependent upon unusual

variations in the amount of transpiration, or to the diminution of the water-content of the leaf, produced by injury or disease of the roots or stem. The direct influence of absence of light is comparatively slight, and the relation between temperature and defoliation was not fully enough tested to be established. Of two series of experiments the higher temperature (17° - 22° C.) promoted the fall of the leaves. The presence of oxygen is necessary to the development of the separating layer. The author holds that the separation of the cells of the separating layer is due to a solution of the middle lamella, by action of a ferment rather than by resorption of the wall.

GEORGE MASSEE, in *Journal of Botany*, has a paper on causes influencing the direction of growth, and the origin of multicellular plants. His conclusions are that, as experimentally proved in the case of *Edogonium*, the normal method of cell-formation is due to the unyielding nature of the external sheath. "The influence of the sheath is not to be considered as the only factor in determining the direction of growth or habit of a plant, but rather that the initial idea of direction and multicellular structure were due to it, and in the simplest as also the unbranched filamentous forms, its influence predominated, but in the latter is modified by the increased power manifested by the protoplasm in softening or completely dissolving certain portions of the sheath for various purposes connected with reproduction," as in the beak of *Vaucheria* and the conjugating tube of *Spirogyra*.

DR. J. VON SACHS gives in *Arbeit. Bot. Inst. Würzburg* (iii. 372-388), the details of the experiments from which he concludes that the invisible ultra-violet rays of the solar spectrum are especially efficacious in the development of flowers. The experiments were all made on *Tropæolum majus*. If the rays of the sun are made to pass through a solution of sulphate of quinine the ultra-violet rays are entirely absorbed or transformed into rays of less refrangibility which are visible and of a light blue color. If a plant is made to grow behind a screen of sulphate of quinine the vegetative organs are normally and luxuriantly developed, but the flowers are almost entirely suppressed. Twenty-six plants thus grown produced only a single feeble flower, while twenty plants grown under similar conditions behind a screen of water of the same thickness produced fifty six flowers. * * * It may be assumed then that there are three distinct regions of the solar spectrum differing in their physiological action—the yellow rays and those near them cause the decomposition of carbon dioxide, and are active in assimilation; the blue and the visible violet rays are the agents in the movements of irritation; the ultra-violet rays are those which produce in green leaves the substances out of which flowers are developed.—*Jour. Roy. Mic. Soc.*, Aug.